

Small Aircraft Turbulence and Associated Hazards Below 10,000

Turbulence

- Turbulence
 - Definitions
 - Types
 - Effects on aircraft (Fixed Wing)

Turbulence

- Definition:

Abrupt or irregular movement of air that create sharp, quick updrafts or downdrafts.

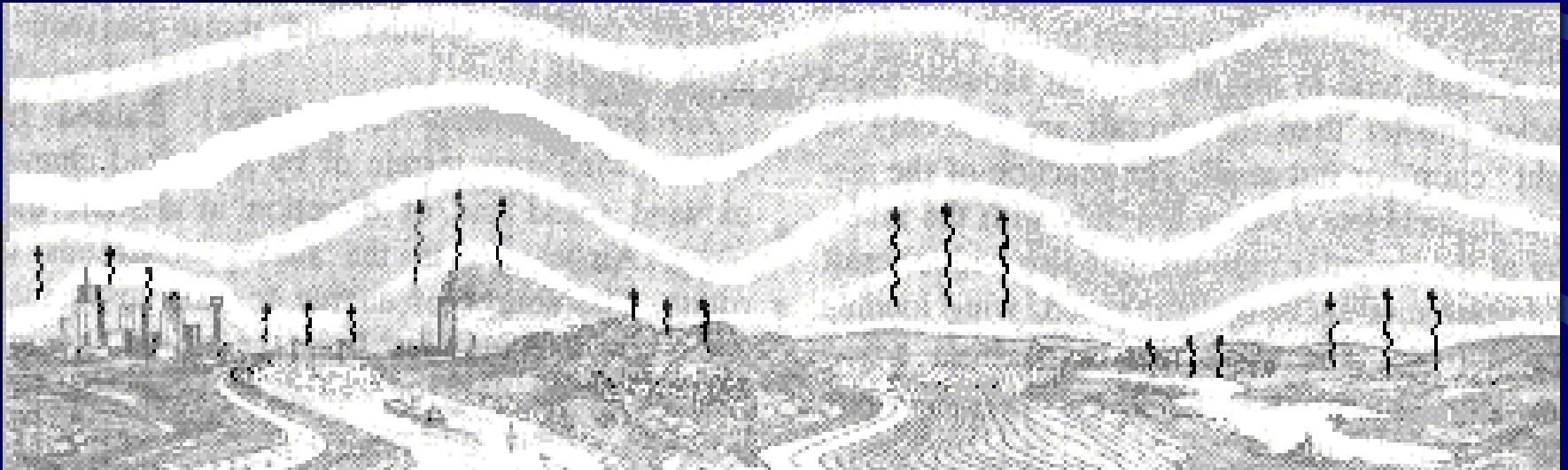
Turbulence Categories

- There are two main types of turbulence:
 - Convective - Due to surface heating
 - Mechanical - Due to vertical or horizontal shear

Turbulence Categories

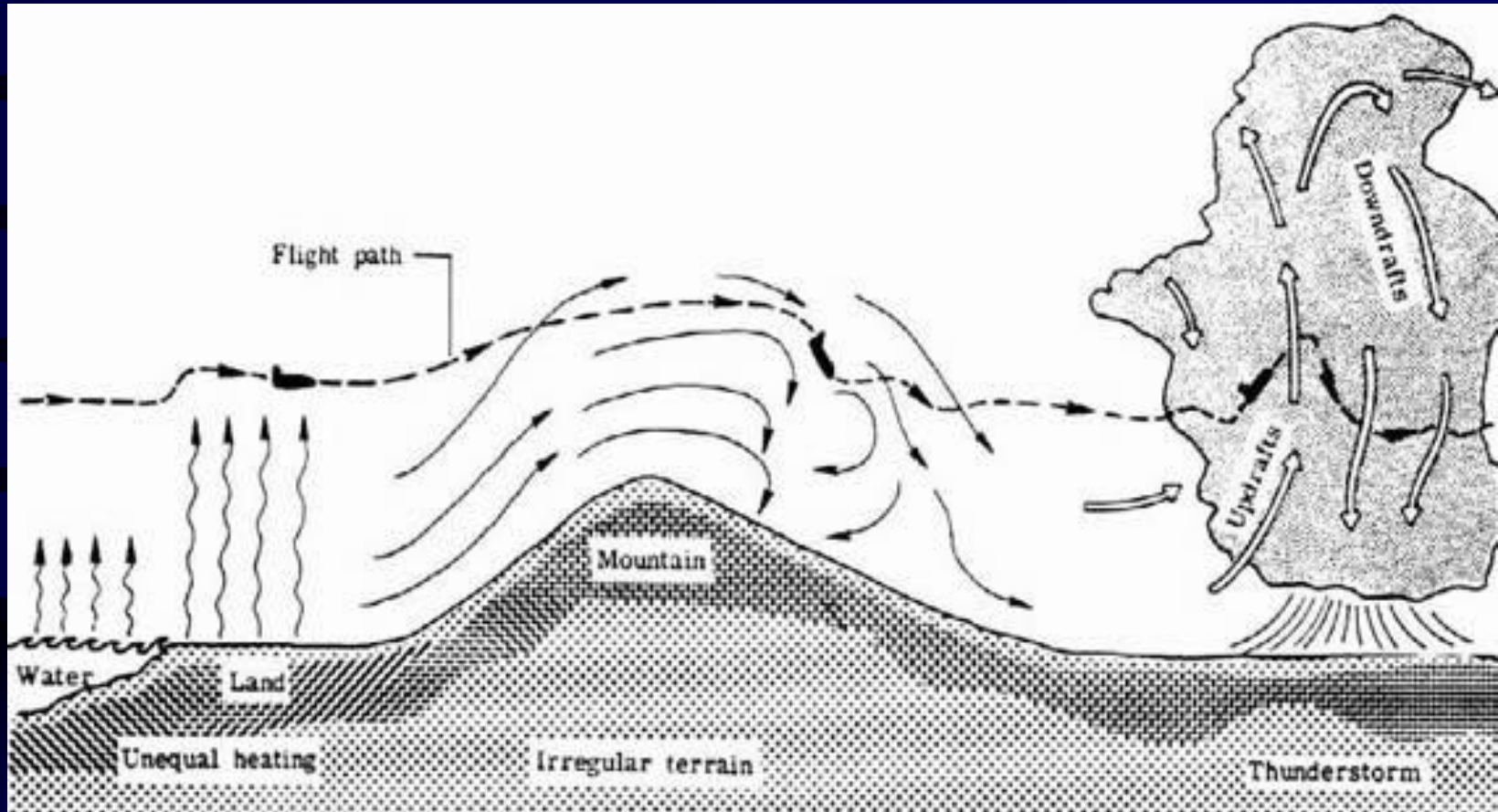
–Convective / Thermal

- Warm air rising creates eddies and gusts that cause “rough air”



Strength determined by amount of radiational heating and surface reflectivity.

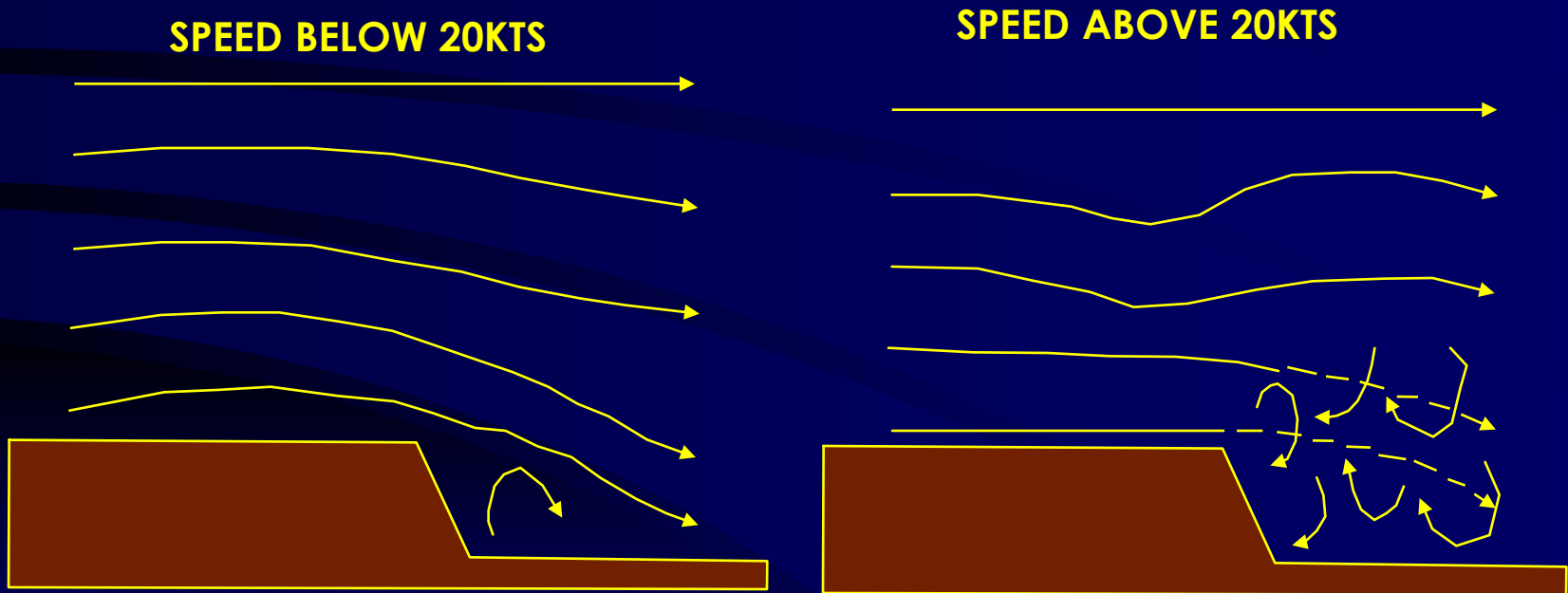
Turbulence Categories



Where Turbulence occurs

Turbulence Categories

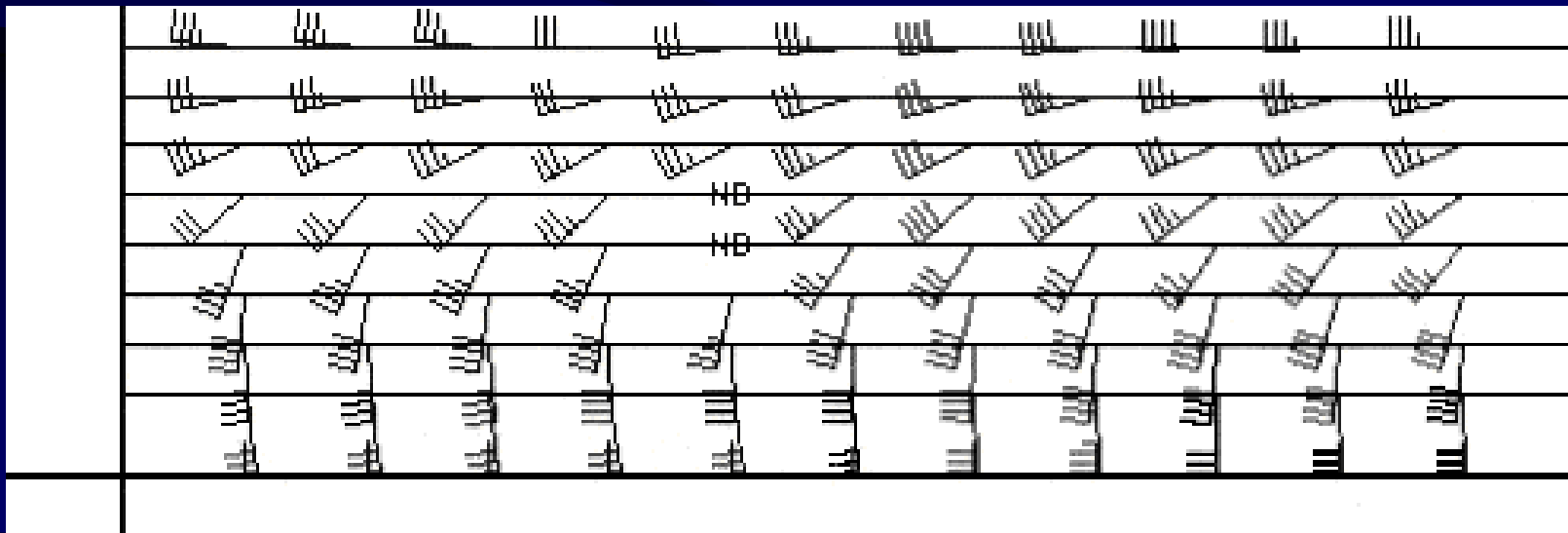
- Mechanical:



Terrain affects wind flow

Turbulence

- VAD Wind Profile
 - Useful in keeping track of significant wind speed and direction change near the radar
 - Provides shear indication vertically



Turbulence Reporting Levels

- **Light Turbulence**
 - Small changes in the aircraft attitude and/or altitude
 - Horizontal change: <25 kts/90 nm
 - Vertical change: 3 - 5 kts/1000'

Turbulence Reporting Levels

- **Moderate Turbulence**
 - Moderate changes in the aircraft attitude and/or altitude
 - Small variations in air speed
 - Horizontal change: 25 - 49 kts/90 nm
 - Vertical change: 6 - 9 kts/1000'

Turbulence Reporting Levels

- **Severe Turbulence**
 - **Abrupt changes in attitude and/or altitude**
 - **Aircraft may be out of control for short periods of time**
 - **Large variations in air speed**
 - **Horizontal change: 50 - 89 kts/90 nm**
 - **Vertical change: 10 - 15 kts/1000'**

Turbulence Reporting Levels

- Extreme Turbulence
 - Aircraft is tossed violently about
 - Aircraft may be impossible to control
 - Structural damage possible
 - Horizontal change: >90 kts/90nm
 - Vertical change: >15 kts/1000'

Seasonal Unique Hazards

(Turbulence)

- Fixed Wing
 - Directly proportional to speed
 - Inversely proportional to weight
 - Directly proportional to the wing area



What can you do to help us and
to help other fliers?



Pilot Reports

Questions or Comments